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Kaiser Foundation Research Institute (K. Sherman, PI). **Using an implementation framework to enhance participation in mindfulness programs for patients with chronic low back pain**. NIH/NCCIH project #1R21AT010170-01. [link]

Wake Forest University (R. Wells, PI). **Mindfulness and mechanisms of pain processing in adults with migraines**. NIH/NCCIH project #3K23AT008406-04S1. [link]

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HIGHLIGHTS

A summary of select studies from the issue, providing a snapshot of some of the latest research

High blood pressure is a major cardiovascular risk factor impacting 35% of U.S. adults. Stress, anxiety, and depression can contribute to its onset and intensification. The condition is usually treated with antihypertensive medications, but a significant proportion of patients fail to achieve adequate control with medication alone.

Researchers are interested in whether stress-reduction interventions together with conventional medical care can improve outcomes compared to medication alone. In a randomized controlled trial, **Marquez et al. [*Journal of Human Hypertension*]** compared relative effectiveness of mindfulness meditation and health education programs in reducing blood pressure as well as levels of stress, anxiety, and depression.

The researchers randomly assigned 42 meditation-naïve participants (average age = 57 years; 43% male; 69% on antihypertensive medication) with high-normal blood pressure or stage 1 hypertension to a Mindfulness Meditation or Health Education intervention. Both interventions were offered in two-hour group sessions that met weekly over the course of 8 weeks.

Mindfulness Meditation content was similar to that offered in Mindfulness-Based Stress Reduction (MBSR). The Health Education intervention offered didactic information on hypertension risk factors, along with methods of prevention through medication, diet, and exercise. Participants were assessed at baseline, 4, 8, and 20 weeks on measures of mindfulness (evaluated using the Five Facet Mindfulness Questionnaire), mood, perceived stress, anxiety, depression, and clinically assessed blood pressure (BP).

Additionally, each participant's ambulatory BP was assessed over a 24-hour period at baseline and at week 8 using a body-worn automated device that measured BP at 15-30 minute intervals throughout the day and night. Ambulatory BP is a sound measure because it eliminates the error associated with the "white coat" effect—the spurious elevation in BP that occurs when doctors measure it.

At post-intervention, the mindfulness group had significantly lower clinically assessed systolic BP (130 mmHg) than the controls (133 mmHg). Similar results were found for 24-hour ambulatory BP: the mindfulness group had significantly lower systolic BP (124 mmHg) and diastolic BP (78 mmHg) than controls (126 mmHg and 80 mmHg, respectively). When ambulatory BP was divided into measures taken while awake and measures taken while asleep, only measures taken while asleep proved significant (109 vs.114 mmHg and 65 vs. 69 mmHg).

At 20 weeks, clinically assessed systolic BP in the mindfulness group dropped 13 mmHg from baseline, whereas the control group dropped only 1 mmHg, a statistically significant difference. Diastolic BP dropped by 14 mmHg in the mindfulness group but only by 3 mmHg in the control group, a difference that failed to reach statistical significance.

At 8 weeks, the mindfulness group reported significantly lower levels of anxiety, stress, and depression, and significantly higher levels of mindfulness. At 20 weeks, the mindfulness group reported significantly lower perceived stress levels than controls, but none of the other group differences in psychological scores reached significance.

The study shows that mindfulness meditation in combination with conventional medication

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treatment reduces blood pressure and stress levels, while improving mindfulness and mood more than medication coupled with health education. The findings appear to be clinically meaningful as a 3 mmHg reduction in systolic blood pressure can reduce stroke mortality by 8% and cardiovascular mortality by 5%. The reductions in this study are equivalent in magnitude to those obtained through regular aerobic exercise. The study is limited by its small sample size and three-month follow-up period.

Mental health problems are costly to society both in terms of treatment-related expenses and lost productivity. If research shows that two treatments are equally effective in reducing symptoms, it seems reasonable to ask which of the two is more cost effective. A recent Swedish study showed that a group-based mindfulness intervention was equally as effective as standard care (mostly individual-based cognitive behavioral therapy) in reducing symptoms of anxiety and depression. **Saha et al. [*British Journal of Psychiatry*]** evaluated the previously published Swedish study to determine the cost-effectiveness of group-based mindfulness interventions as compared to the costs of standard care.

The original study randomly assigned 215 Swedish patients (average age = 42 years; 85% female) diagnosed with depression, anxiety, stress, or adjustment disorders who were being treated at 16 different primary care health centers to either a mindfulness-based intervention (MBI) or standard care. The MBI was offered in two-hour weekly group sessions over eight weeks and based on Mindfulness-Based Stress Reduction and Mindfulness-Based Cognitive Therapy. The majority of standard care patents (76%) received individual cognitive-behavioral therapy for an average of 6.3 sessions.

Intervention and control participants were equally likely to be taking antidepressant and/or anti-anxiety medications, so that group differences cannot be attributed to medication effects. The researchers compared the two groups in terms of 1) total health care costs over the course of 8 weeks (the costs of therapy, medication, and medical visits), 2) self-reported quality of life improvement in terms of mobility, self-care, activities of daily living, pain, suffering, anxiety, and depression, and 3) productivity in terms of patient reported sick leave and hours worked.

The results showed that the group-based mindfulness intervention cost about $130 less per patient over the course of 8 weeks than standard care consisting of mostly individual therapy and counseling. The cost difference was not due to differences in medication use or healthcare utilization, but to the fact that group treatments require less professional time than individual treatments. The groups did not differ significantly in terms of patient reported quality of life or work productivity.

This study shows that over the course of 8 weeks, a group-based mindfulness intervention was less expensive than standard Swedish primary care. A prior analysis showed that the mindfulness intervention was roughly equivalent to standard care in terms of symptom outcomes. The results are important because they point to a potential cost savings gained from group treatments compared to individual treatments without inferior outcomes.

In the United States, 30% of patients with diagnosable depression receive no treatment at all. Many do not have adequate insurance, and there are not enough individual therapists to meet the need. Finding more affordable ways to deliver care and taking advantage of opportunities to utilize therapist time more efficiently is important. The study is limited by its eight-week length, as there may be other cost and productivity differences that emerge over a longer period of time. It is also limited by relying on patient reports of medication use and medical visits rather than making use of more objective pharmacy, clinic, and insurance records.